

PLEASE AMEND THE CLAIMS AS FOLLOWS:

Claims 1 - 19 (cancelled)

Claim 20. (currently amended) A metal structure on a semiconductor substrate, comprising:

a substantially straight walled via hole in an insulator layer exposing a portion of an underlying lower level metal interconnect structure;

5 a recessed metal plug structure located in a bottom portion of said substantially straight walled via hole, with said recessed metal plug structure overlying and contacting the portion of said lower level metal interconnect structure exposed in said substantially straight walled via hole; and

said metal structure comprised with a metal segment located only on a first portion of a smooth top surface of said insulator layer, with an absence of said metal segment on a bare, second portion of said insulator layer; and

10 ~~and with said metal structure comprised with a metal ring structure attached to said metal segment and located on exposed sides of top portion of said via hole, and wherein said metal ring structure comprised of metal spacers located on all sides of a top portion of said via hole, traversing all exposed sides of said top portion of said via hole from~~
15 ~~the top perimeter of said via hole to a top surface of said recessed metal plug structure, and with said metal spacers terminating and converging at center of top surface of said recessed plug structure.~~

said metal structure comprised with a metal ring structure completely located in a top portion of said substantially straight walled via hole contacting top surface of said recessed metal plug structure, with said metal ring structure continually decreasing in thickness from each side of, to the center of top portion of said substantially straight
5 walled via hole.

Claim 21. (previously amended) The metal structure of claim 20, wherein said lower level metal interconnect structure is comprised of a composite metal structure, featuring an aluminum, or an aluminum based layer, at a thickness between about 2000 to 20000 Angstroms, with an underlying titanium nitride layer, at a thickness between about 100 to 1500 Angstroms, and an overlying titanium nitride layer, at a thickness between about 100 to 1500 Angstroms.

Claim 22. (Currently amended) The metal structure of claim 20, wherein said substantially straight walled via hole is comprised with a diameter between about 0.10 to 1.0 um.

Claim 23. (Currently amended) The metal structure of claim 20, wherein said recessed metal plug structure, is comprised of tungsten, with the height of said recessed metal plug structure, located in said bottom portion of said substantially straight walled via hole, between about 3000 to 20000 Angstroms.

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Claim 24. (Currently amended) The metal structure of claim 20, wherein said metal ring structure, ~~attached to said first portion of said metal structure,~~ is comprised of aluminum, or aluminum - copper spacers, located on the sides of said top portion of said via hole.